UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,159	04/15/2004	Hua-Jun Zeng	MS1-1920US	8623

22801 7590 09/20/2007
LEE & HAYES PLLC
421 W RIVERSIDE AVENUE SUITE 500
SPOKANE, WA 99201

EXAMINER	
SANDERS, AARON J	

ART UNIT	PAPER NUMBER
2168	

MAIL DATE	DELIVERY MODE
09/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,159	ZENG ET AL.	
	Examiner	Art Unit	
	Aaron Sanders	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-31 and 33-40* is/are rejected.

7)☒ Claim(s) *11 and 32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/21/2007 and 07/24/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 24 July 2007 has been entered.

Claim Objections

As per claim 24, the phrase "The computer-readable medium of recited in claim 22" is grammatically incorrect. Appropriate correction is required.

Claim Rejections - 35 USC § 112 First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 13, and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, there is no mention of a "search term

suggestion component" in the specification. Additionally, claim 22 recites a "tangible" medium, but "tangible" is not mentioned or defined in the specification.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 34-40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 34-40, the instant claims are directed to software *per se*. Independent claim 34 recites a computer program *per se* and functional descriptive material consisting of data structures and computer programs, which impart functionality when employed as a computer component. As such, the instant claims are not limited to statutory subject matter and are therefore non-statutory. See Diehr, 450 U.S. at 185-86, 209 USPQ at 8.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21 (2) of such treaty in the English language.

Claims 1-10, 12-31, 33-35, 37-40 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. 2003/0110181 (hereinafter Schuetze).

As per claims 1-10, 12-31, 33-35, 37-40, Schuetze teaches:

1. A computer-implemented method comprising:

identifying relationships between multi-type data objects *(See e.g. Schuetze Fig. 10 where, see [0141], "Its similarity is calculated with respect to each cluster center (step 1014), using one of the similarity metrics set forth above. The object is then assigned to the nearest cluster center (step 1016)" where the claimed "identifying relationships" is the referenced similarity calculation and clustering)*, wherein the multi-type data objects comprise at least one object of a first type and at least one object of a second type different from the first type *(See e.g. Schuetze [0030], "This approach is relevant to data sets where each object has several disparate types of information associated with it, which are called modalities" where the claimed "multi-type data object" is the referenced "object" and the claimed "object of a first [second] type" is a referenced "modality")*;

iteratively clustering the multi-type data objects in view of respective ones of the relationships to generate reinforced clusters *(See e.g. [0035], "Using the system, a user progressively narrows a collection to a small number of elements of interest, similar to the Scatter/Gather system developed for text browsing, except the Scatter/Gather method is extended hereby to use multi-modal features" where, see [0043], "iterative clustering and selection of cluster subsets can help a user identify images of interest")*; and

utilizing, by a search term suggestion component, the reinforced clusters to respond to a search query from a user with terms relevant to the search query *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms... The user decides to scatter the first text cluster containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters" where the claimed "search term suggestion" is a referenced text string such as "information world resources ac buttons" and the claimed "reinforced clusters" are the referenced "Text Clusters 1-5" since they are the "clusters closest to the query terms").*

2. The method of claim 1, wherein the relationships comprise inter-layer relationships including one or more of content related information, user interest in an associated topic, and user interest in an associated Web page *(See e.g. [0032], "The method takes/advantage of multiple ways in which a user can specify items of interest. For example, in images, features from the text and image modalities can be used to describe the images... clustering may be performed on a different feature (e.g., surrounding text, image URL, image color histogram, genre of the surrounding text)").*

3. The method of claim 1, wherein the relationships comprise intra-layer relationships including one or more of query refinement(s), recommended Web page(s), and relationship(s) between respective users *(See e.g. [0028], "It is also useful to be able to track individuals' information access habits by way of the characteristics of the*

documents those users access, thereby enabling a recommendation system in which users are assigned to similar clusters").

4. The method of claim 1, wherein each of the multi-type data objects are related to one or more of a search query data object type, a selected Web page type, and a user information type *(See e.g. [0037], "Multi-modal features may take on many forms, such as user information, text genre, or analysis of images").*

5. The method of claim 1, wherein respective ones of the relationships are weighted to indicate importance to associated objects of the multi-type data objects *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").*

6. The method of claim 1, wherein identifying an iteratively clustering are performed for search term suggestion *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms... The user decides to scatter the first text cluster containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters").*

7. The method of claim 1, wherein iteratively clustering further comprises propagating clustering results of a first iteration to all related data objects of the multi-type data objects, at least two of the related data objects being of heterogeneous data type, the propagating being used to enhance clustering of respective ones of the multi-type data objects in a second iteration of reinforced clustering operations *(See e.g.*

[0152], "Scatter/Gather iteratively refines a search by 'scattering' a collection into a small number of clusters, and then a user 'gathers' clusters of interest for scattering again. The Scatter/Gather method is extended by the invention to extend to a multi-modal, multi-feature method, using both text and image features to navigate a collection of documents with text and images").

8. The method of claim 1, wherein iteratively clustering further comprises determining a similarity between individual ones of the multi-type data objects, the similarity being a function of one or more of inter-object and intra-object content similarity and similarities between respective ones of the relationships *(See e.g. [0003], "The invention relates to... an efficient scheme for assigning data objects in a collection to clusters based on similarities in their contents and characteristics").*

9. The method of claim 1, wherein iteratively clustering further comprises merging related ones of the multi-type data objects to reduce feature space dimensionality of the related ones *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").*

10. The method of claim 1, wherein the method further comprises mutually reinforcing an importance of individual ones of the multi-type data objects within an object type and between different object types *(See e.g. [0097], "The use of token, frequency weight and inverse context frequency weight for the embedding employed by the invention is consistent with the following intuitive description. Each additional*

occurrence of an element (or word, for example) in a context (e.g., a document) reflects an increased level of importance for that element as a descriptive feature").

12. The method of claim 1, wherein utilizing the reinforced clusters further comprises:

responsive to receiving a term from a user, comparing the term with a feature space of objects in the reinforced clusters *(See e.g. Fig. 12, "Query Words" 1210)*;

responsive to comparing, identifying one or more search term suggestions *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms")*; and

communicating the search term suggestions to the user *(See e.g. Fig. 12, "Text Cluster[s]" 1216, 1218, 1220, 1222, and 1224).*

13. A computing device comprising:

a processor *(See e.g. Fig. 1, "processor 122")*; and

a memory coupled to the processor, the memory comprising computer-program instructions executable by the processor for *(Fig. 1 and [0077], "the collection 120 is hosted by one or more servers also coupled to the network 124" where a "server" includes a "memory")*:

identifying relationships between multi-type data objects *(See e.g. Schuetze Fig. 10 where, see [0141], "Its similarity is calculated with respect to each cluster center (step 1014), using one of the similarity metrics set forth above. The object is then assigned to the nearest cluster center (step 1016)" where the claimed "identifying*

relationships" is the referenced similarity calculation and clustering), wherein the multi-type data objects comprise at least one object of a first type and at least one object of a second type different from the first type *(See e.g. Schuetze [0030], "This approach is relevant to data sets where each object has several disparate types of information associated with it, which are called modalities" where the claimed "multi-type data object" is the referenced "object" and the claimed "object of a first [second] type" is a referenced "modality")*;

iteratively clustering the multi-type data objects in view of respective ones of the relationships to generate reinforced clusters *(See e.g. [0035], "Using the system, a user progressively narrows a collection to a small number of elements of interest, similar to the Scatter/Gather system developed for text browsing, except the Scatter/Gather method is extended hereby to use multi-modal features" where, see [0043], "iterative clustering and selection of cluster subsets can help a user identify images of interest")*, each relationship of the relationships being weighted to indicate an importance to associated objects of the multi-type data objects *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity")*; and

utilizing, by a search term suggestion component, the reinforced clusters to respond to a search query from a user with terms relevant to the search query *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms... The user decides to scatter the first text cluster*

containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters" where the claimed "search term suggestion" is a referenced text string such as "information world resources ac buttons" and the claimed "reinforced clusters" are the referenced "Text Clusters 1-5" since they are the "clusters closest to the query terms").

14. The computing device of claim 13, wherein the relationships comprise inter\-layer relationships including one or more of content related information, user interest in an associated topic, and user interest in an associated Web page *(See e.g. [0032], "The method takes advantage of multiple ways in which a user can specify items of interest. For example, in images, features from the text and image modalities can be used to describe the images... clustering may be performed on a different feature (e.g., surrounding text, image URL, image color histogram, genre of the surrounding text)").*

15. The computing device of claim 13, wherein the relationships comprise intra-layer relationships including one or more of query refinement(s), recommended Web page(s), and relationship(s) between respective users *(See e.g. [0028], "It is also useful to be able to track individuals' information access habits by way of the characteristics of the documents those users access, thereby enabling a recommendation system in which users are assigned to similar clusters").*

16. The computing device of claim 13, wherein identifying an iteratively clustering are performed for search term suggestion *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the*

query terms... The user decides to scatter the first text cluster containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters").

17. The computing device of claim 13, wherein the computer-program instructions for iteratively clustering further comprise instructions for aggregating data object relationships to related ones of the multi-type data objects based on content of the reinforced clusters *(See e.g. [0031], "Each modality within each document is described herein by an n-dimensional vector, thereby facilitating quantitative analysis of the relationships among the documents in the collection" where, see [0076], "As illustrated in FIG. 1, each document (for example, an HTML document 110) chosen from a collection 120 maps to a set of feature vectors 112, one for each modality (for example, a text vector 114 and a URL vector 116)").*

18. The computing device of claim 13, wherein the instructions for iteratively clustering further comprise instructions for determining a similarity between individual ones of the multi-type data objects, the similarity being a function of one or more of inter-object and intra-object content similarity and similarities between respective ones of the relationships *(See e.g. [0003], "The invention relates to... an efficient scheme for assigning data objects in a collection to clusters based on similarities in their contents and characteristics").*

19. The computing device of claim 13, wherein the instructions for iteratively clustering further comprise instructions for merging related ones of the multi-type data objects to reduce feature space dimensionality of the related ones *(See e.g. [0033],*

"various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").

20. The computing device of claim 13, wherein the instructions for iteratively clustering further comprise instructions for iteratively clustering until all object types represented by the multi-type data objects converge *(See e.g. [0078], "the collection 120 comprises all known documents that will ever by [sic] processed by a system according to the invention" where the "process" is illustrated in Fig. 3 and where "converge" is defined in Applicant's specification paragraph [0074] as, "each type of the different kinds of nodes and links are examined to obtain structural information that can be used for clustering").*

21. The computing device of claim 13, wherein utilizing the reinforced clusters further comprises:

responsive to receiving a term from a user, comparing the term with a feature space of objects in the reinforced clusters *(See e.g. Fig. 12, "Query Words" 1210)*;

responsive to comparing, identifying one or more search term suggestions *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms")*; and

communicating the search term suggestions to the user *(See e.g. Fig. 12, "Text Cluster[s]" 1216, 1218, 1220, 1222, and 1224).*

22. A tangible computer-readable data storage medium comprising computer-executable instructions executable by a processor for:

identifying one or more of intra-layer and inter-layer relationships between multi-type data objects *(See e.g. Schuetze Fig. 10 where, see [0141], "Its similarity is calculated with respect to each cluster center (step 1014), using one of the similarity metrics set forth above. The object is then assigned to the nearest cluster center (step 1016)" where the claimed "identifying relationships" is the referenced similarity calculation and clustering)*, wherein the multi-type data objects comprise at least one object of a first type and at least one object of a second type different from the first type *(See e.g. Schuetze [0030], "This approach is relevant to data sets where each object has several disparate types of information associated with it, which are called modalities" where the claimed "multi-type data object" is the referenced "object" and the claimed "object of a first [second] type" is a referenced "modality")*;

iteratively clustering the multi-type data objects in view of respective ones of the relationships to generate reinforced clusters *(See e.g. [0035], "Using the system, a user progressively narrows a collection to a small number of elements of interest, similar to the Scatter/Gather system developed for text browsing, except the Scatter/Gather method is extended hereby to use multi-modal features" where, see [0043], "iterative clustering and selection of cluster subsets can help a user identify images of interest")*; and

utilizing, by a search term suggestion component, the reinforced clusters to respond to a search query from a user with terms relevant to the search query *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms... The user decides to scatter the first text cluster*

containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters" where the claimed "search term suggestion" is a referenced text string such as "information world resources ac buttons" and the claimed "reinforced clusters" are the referenced "Text Clusters 1-5" since they are the "clusters closest to the query terms").

23. The computer-readable medium of claim 22, wherein the inter-layer relationships comprise one or more of content related information, user interest in an associated topic, and user interest in an associated Web page *(See e.g. [0032], "The method takes advantage of multiple ways in which a user can specify items of interest. For example, in images, features from the text and image modalities can be used to describe the images... clustering may be performed on a different feature (e.g., surrounding text, image URL, image color histogram, genre of the surrounding text)").*

24. The computer-readable medium of claim 22, wherein the intra-layer relationships comprise at least one of query refinement(s), recommended Web page(s), and relationship(s) between respective users *(See e.g. [0028], "It is also useful to be able to track individuals' information access habits by way of the characteristics of the documents those users access, thereby enabling a recommendation system in which users are assigned to similar clusters").*

25. The computer-readable medium of claim 22, wherein each of the multi-type data objects are related to at least one of a search query data object type, a selected Web page type, and a user information type *(See e.g. [0037], "Multi-modal features may take on many forms, such as user information, text genre, or analysis of images").*

26. The computer-readable medium of claim 22, wherein respective ones of the relationships are weighted to indicate an importance to associated objects of the multi-type data objects *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").*

27. The computer-readable medium of claim 22, wherein identifying an iteratively clustering are performed for search term suggestion *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms... The user decides to scatter the first text cluster containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters").*

28. The computer-readable medium of claim 22, wherein iteratively clustering further comprises propagating clustering results of a first iteration to all related data objects of the multi-type data objects, at least two of the related data objects being of heterogeneous data type, the propagating being used to enhance clustering of respective ones of the multi-type data objects in a second iteration of reinforced clustering operations *(See e.g. [0152], "Scatter/Gather iteratively refines a search by 'scattering' a collection into a small number of clusters, and then a user 'gathers' clusters of interest for scattering again. The Scatter/Gather method is extended by the invention to extend to a multi-modal, multi-feature method, using both text and image features to navigate a collection of documents with text and images").*

29. The computer-readable medium of claim 22, wherein iteratively clustering further comprises determining a similarity between individual ones of the multi-type data objects, the similarity being a function of at least one of object content similarity and similarities between respective ones of the relationships *(See e.g. [0003], "The invention relates to... an efficient scheme for assigning data objects in a collection to clusters based on similarities in their contents and characteristics").*

30. The computer-readable medium of claim 22, wherein iteratively clustering further comprises merging related ones of the multi-type data objects to reduce feature space dimensionality of the related ones *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").*

31. The computer-readable medium of claim 22, wherein the instructions further comprise instructions for mutually reinforcing importance of individual ones of the multi-type data objects within an object type and between different object types *(See e.g. [0097], "The use of token frequency weight and inverse context frequency weight for the embedding employed by the invention is consistent with the following intuitive description. Each additional occurrence of an element (or word, for example) in a context (e.g., a document) reflects an increased level of importance for that element as a descriptive feature").*

33. The computer-readable medium of claim 22, wherein utilizing the reinforced clusters further comprises:

responsive to receiving a term from a user, comparing the term with a feature space of objects in the reinforced clusters *(See e.g. Fig. 12, "Query Words" 1210)*;

responsive to comparing, identifying one or more search term suggestions *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms")*; and

communicating the search term suggestions to the user *(See e.g. Fig. 12, "Text Cluster[s]" 1216, 1218, 1220, 1222, and 1224).*

34. A computing device comprising:

identifying means to identify relationships between multi-type data objects *(See e.g. Schuetze Fig. 10 where, see [0141], "Its similarity is calculated with respect to each cluster center (step 1014), using one of the similarity metrics set forth above. The object is then assigned to the nearest cluster center (step 1016)" where the claimed "identifying relationships" is the referenced similarity calculation and clustering)*, wherein the multi-type data objects comprise at least one object of a first type and at least one object of a second type different from the first type *(See e.g. Schuetze [0030], "This approach is relevant to data sets where each object has several disparate types of information associated with it, which are called modalities" where the claimed "multi-type data object" is the referenced "object" and the claimed "object of a first [second] type" is a referenced "modality")*;

iterative clustering means to iteratively cluster the multi-type data objects in view of respective ones of the relationships to generate reinforced clusters *(See e.g. [0035],*

"Using the system, a user progressively narrows a collection to a small number of elements of interest, similar to the Scatter/Gather system developed for text browsing, except the Scatter/Gather method is extended hereby to use multi-modal features" where, see [0043], "iterative clustering and selection of cluster subsets can help a user identify images of interest"); and

utilizing means to use the reinforced clusters to respond to a search query from a user with terms relevant to the search query *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms... The user decides to scatter the first text cluster containing the terms 'ancient' and 'cathedral' again based on text... As described above, this causes the system to refine the existing selected cluster into smaller separate clusters" where the claimed "search term suggestion" is a referenced text string such as "information world resources ac buttons" and the claimed "reinforced clusters" are the referenced "Text Clusters 1-5" since they are the "clusters closest to the query terms").*

35. The computing device of claim 34, wherein the computing device further comprises weighting means to weight respective ones of the relationships to indicate an importance to associated objects of the multi-type data objects *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").*

37. The computing device of claim 34, wherein the iterative clustering means further comprise aggregating means to propagate data object relationships to related ones

of the multi-type data objects based on content of the reinforced clusters *(See e.g. [0031], "Each modality within each document is described herein by an n-dimensional vector, thereby facilitating quantitative analysis of the relationships among the documents in the collection" where, see [0076], "As illustrated in FIG. 1, each document (for example, an HTML document 110) chosen from a collection 120 maps to a set of feature vectors 112, one for each modality (for example, a text vector 114 and a URL vector 116)").*

38. The computing device of claim 34, wherein the iterative clustering means further comprise determining means to determine a similarity between individual ones of the multi-type data objects, the similarity being a function of at least one of object content similarity and similarities between respective ones of the relationships *(See e.g. [0003], "The invention relates to... an efficient scheme for assigning data objects in a collection to clusters based on similarities in their contents and characteristics").*

39. The computing device of claim 34, wherein the iterative clustering means further comprise merging means to combine related ones of the multi-type data objects to reduce feature space dimensionality of the related ones *(See e.g. [0033], "various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity").*

40. The computing device of claim 34, wherein utilizing the reinforced clusters further comprises:

comparing means, responsive to receive a term from a user, to compare the term with a feature space of objects in the reinforced clusters *(See e.g. Fig. 12, "Query Words" 1210)*; and

responsive to comparing, identifying one or more search term suggestions *(See e.g. Fig. 12 and [0171], "A snapshot of the screen displaying five returned text clusters 1216, 1218, 1220, 1222, and 1224 is shown in the left half of FIG. 12. These clusters are the clusters closest to the query terms").*

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 2003/0110181 (hereinafter Schuetze), in view of U.S. 6,169,986 (hereinafter Bowman).

36. The computing device of claim 34, wherein the computing device further comprises determining means to locate a search term suggestion from the reinforced clusters responsive to receipt of a bid term, the search term suggestion substantially matching or being related to one or more of the multi-type data objects *(Schuetze et al. do not teach suggesting search terms in response to a bid term. However, Bowman et al. do, see col. 4, lines 34-52. Thus, it would have been obvious to one of ordinary skill in the database searching art at the time of the invention to combine the teachings of the cited*

references because Bowman's et al. teachings would have allowed Schuetze's et al. method and system to gain the ability "to further refine the query and narrow the query result by selecting one or more related query terms that more accurately reflect the user's intended request", see col. 1, line 48 – col. 2, line 3).

Allowable Subject Matter

Claims 11 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

As per Applicant's argument that claims 1, 13, 22, and 34 should not be rejected under 35 U.S.C. 112 because of a recitation of intended use, the Examiner respectfully disagrees. While the previous 112 rejections have been withdrawn, new ones have been made, thus the Examiner will clarify the rejection. Specifically, claims 1, 13, 22, and 34 provide for the use of "iteratively clustering", i.e. "to generate reinforced clusters", but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process Applicant is intending to encompass. This does not mean that the claims contain no active steps. Rather, it means that there are no claimed steps that recite how "iteratively clustering" is used "to generate reinforced clusters".

As per Applicant's argument that claims 34-39 are statutory under 35 U.S.C. 101, the Examiner respectfully disagrees. While the preamble of the claims may recite a

computing device, the claim limitations do not recite any hardware. Thus, there is no reason to assume that the claim limitations are actually embodied in hardware.

As per Applicant's argument that Schuetze does not disclose the limitation "identifying relationships between multi-type data objects, wherein the multi-type data objects comprise at least one object of a first type and at least one object of a second type different from the first type" in claim 1, the Examiner respectfully disagrees. The Examiner cited Schuetze [0022], "Disparate types of information such as text, image features and usage are referred to as 'modalities.' Multi-modal clustering hence is the grouping of objects that have data from several modalities associated with them". While this reference is primarily a definition of terms, it is defining the multi-type object clustering disclosed by Schuetze's et al. This identification of and relationship among multi-type data objects is further explained in Schuetze [0033], "In an alternative application of the invention, various document features in different modalities are appropriately weighted and combined to form clusters representative of overall similarity".

Applicant cited Schuetze Fig. 3 as an example of how Schuetze do not teach the claimed invention. However, the Examiner points out that Schuetze describe several embodiments of their method, and the Examiner does not refer to the embodiment shown in Fig. 3 in the rejection of the instant claim.

As per Applicant's argument that Schuetze does not disclose the limitation "iteratively clustering the multi-type data objects in view of respective ones of the relationships to generate reinforced clusters" in claim 1, the Examiner respectfully

disagrees. The Applicant has not explicitly defined the term "reinforced clusters", thus the Examiner is free to give the term its broadest reasonable interpretation in the art. The Examiner cited Schuetze [0043], "iterative clustering and selection of cluster subsets can help a user identify images of interest". This is further explained in Schuetze [0035], "Using the system, a user progressively narrows a collection to a small number of elements of interest, similar to the Scatter/Gather system developed for text browsing, except the Scatter/Gather method is extended hereby to use multi-modal features". These references show that the multi-modal clusters are being iteratively narrowed into "cluster subsets", or the claimed "reinforced clusters".

As per Applicant's argument that claims 6, 16, and 27 are not obvious over Scheutze et al. in view of Bowman et al. because Schuetze does not teach each limitation of the independent claims upon which the instant claims depend, the Examiner disagrees and has clarified the rejections of claims 1, 13, and 22.

As per Applicant's argument that the 35 U.S.C. 103(a) rejections of claims 12, 21, 33, and 40 admit that Schuetze do not teach each limitation of the independent claims, the Examiner respectfully disagrees, and after reviewing the rejections does not see how this could have been accomplished. Further, after closer study of Schuetze, the Examiner believes that the reference does indeed teach suggesting search terms, as depicted in Fig. 12, and has withdrawn the 35 U.S.C. 103(a) rejections accordingly.

Applicant has not argued the 35 U.S.C. 103(a) rejection of claim 36.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Aaron Sanders whose telephone number is 571-270-1016. The Examiner can normally be reached on M-Th 8:00a-5:00p.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Tim Vo can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AJS/
Aaron J. Sanders
Examiner
10 September 2007

TIM VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100